

# FEASIBILITY STUDY

City of Whiteville

Improvements to US 701 Bypass (Madison St./Powell Blvd.)  
From SR 1166 (Pleasant Plains Road)  
To US 74/76 Bypass

Columbus County

Division 6

FS-0206A



Prepared by the  
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Date

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## **I. General Description**

This feasibility study describes the traffic operation and safety improvements to US 701 Bypass (Madison St./Powell Blvd.) from SR 1166 (Pleasant Plains Road) to US 74/76 Bypass, a distance of approximately 4.0 miles. The project location is shown on Figures 1 and 2. As part of the study, two different cross-sections were investigated; the details of each are as follows:

### ***ALTERNATIVE 1***

- ◆ **SECTION A:** Four-lane divided curb and gutter section, 79' wide face to face of curbs with a 23' raised grass median on 120' of right of way from 600' south of SR 1166 (Pleasant Plains Road) to approximately 835' south of NC 130 (Love Mill Road) intersection.
- ◆ **SECTION B:** Four-lane divided curb and gutter section, 79' wide face to face of curbs with a 23' raised grass median on 120' of right of way from approximately 1100' north of NC 130 (Love Mill Road) to US 74/76 Bypass interchange.

### ***ALTERNATIVE 2***

- ◆ **SECTION A:** Five-lane curb and gutter section, 68' wide face to face of curbs on 120' of right of way from 600' south of SR 1166 (Pleasant Plains Road) to approximately 835' south of NC 130 (Love Mill Road) intersection.
- ◆ **SECTION B:** Five-lane curb and gutter section, 68' wide face to face of curbs on 120' of right of way from approximately 1100' north of NC 130 (Love Mill Road) to US 74/76 Bypass interchange.

**Note:** The gap from section A to Section B in both alternatives above is being addressed under a Division 6 Moving Ahead project. Therefore, this feasibility study only recommends resurfacing the intersection in this project.

This study is the initial step in the planning and design process for this project and is not the product of exhaustive environmental design investigations. The purpose of this study is to describe the proposed project including costs, and to identify potential problems that may require consideration in the planning and design phases.

## **II. Background**

The purpose of this project is to increase the traffic carrying capacity of US 701 Bypass (Madison St./Powell Blvd.) in order to promote a safer environment for motorists, pedestrians, and bicyclists and accommodate projected growth along the corridor.

The City of Whiteville, Columbus County Transportation Committee and the Cape Fear Rural Planning Organization (RPO) support this project.

US 701 Bypass (Madison St./Powell Blvd.) is designated as a major thoroughfare in the Whiteville/Brunswick Municipal Urban Area Thoroughfare Plan and as an “other principal” in the North Carolina Statewide Functional Classification System.

US 701 Bypass has discontinuity in its present cross-sections, starting with the transition from a two-lane shoulder facility south of the project, to a three-lane curb and gutter section, to a four-lane divided curb and gutter section, to a three lane shoulder section, to a two lane shoulder section, and finally to a five-lane curb and gutter section to the US 74/76 Bypass.

The development along this section of US 701 Bypass is primarily a mixture of business commercial and retail businesses with some residential housing.

Division 6 has completed an upgrade to the US-701 Bypass/NC 130 intersection including some approach realignment, widening, concrete islands and grass medians through a North Carolina Moving Ahead Program project. The resulting cross-section for US 701 Bypass through this intersection is a four-lane divided curb and gutter section, approximately 3,054 feet long with variable pavement width. This newly upgraded area accounts for the gap between Sections A and B, since major improvements will not be needed in this area. However, resurfacing this area is included this study.

There are two existing bridges on US 701 Bypass/NC 130, Bridge Number 19 over Soules Swamp and Bridge Number 42, which crosses over Main Street and the Carolina Southern Railroad (CALA), (Crossing No. 629 266B). Although this railroad is currently inactive, it has not been officially abandoned.

## **III. Traffic and Safety**

There are six (6) existing traffic signals on this project, located at SR 1429 (Slippery Log Road), Wal-Mart entrance, NC 130 (Love Mill Road), US 74/76 Business (Washington Street), SR 1437 (Virgil Street) and Burkhead Street intersections. With the proposed improvements, all six of the signals need upgrading, and these costs have been included in the estimate in section IV. A closed loop signal system is in place and should be considered during the design phase.

The current year Average Daily Traffic (ADT) along the US 701 Bypass (Madison St./Powell Blvd.), ranges from 15,400 vehicles per day (vpd) to 23,000 vpd. For the design year 2035, the estimated traffic volumes on US 701 Bypass will range from 30,600 vpd to 45,600 vpd. Truck traffic is estimated to make up approximately six percent of daily traffic on the project.

Currently the US 701 Bypass/NC 130 intersection operates at a Level of Service (LOS) "B", the SR 1437 intersection operates at a LOS of "D", the US 74/76 Business intersection fails to operate at an acceptable LOS and the SR 1552 intersection operates at a LOS of "B". If no improvements are made, US 701 Bypass will operate at an unacceptable "E" LOS throughout the projects limits by the Design Year. However, if the recommended improvements were made to US 701 Bypass, the facility would operate at a LOS "D" or better through the 2035 design year and promote safer travel, operations, and enhance pedestrian safety.

During the three-year period from July 1, 2003 to June 30, 2006, 257 accidents were reported within the project limits. The accident rate for this 4.0 mile portion of roadway is 326.33 accidents per 100 million vehicle miles of travel (acc/100mvm), which is slightly lower than the Statewide rate of 345.67 (acc/100mvm) for Urban United States Routes. However, the non-fatal crash rate is 144.05 crashes per 100 MVM, which is 8% higher than the State Critical Rate of 133.3 crashes per 100 MVM. During this period, there were 113 injury crashes, 143 property damage only crashes, and 1 fatal crash. The most prevalent types of accidents were Angle (38%) and Rear End-Slow or Stop (31%). The number and the severity of the types of crashes are expected to decrease with the suggested improvements.

#### **IV. Description of Alternatives**

It is proposed to improve US 701 Bypass (Madison St./Powell Blvd.) from SR 1166 (Pleasant Plains Road) to US 74/76 Bypass, a distance of approximately 4.0 miles, shown in Figures 1 and 2. Two cross-sections were studied. The details of the proposed sections are as follows:

##### ***ALTERNATIVE 1***

**Section A:** Four-lane divided curb and gutter section, 79' wide face to face of curbs with a 23' raised grass median and 15' berms on 120' of right of way from 600' south of SR 1166 (Pleasant Plains Road) to approximately 835' south of NC 130 (Love Mill Road) intersection. This cross-section has 14' wide outside lanes to accommodate bicycles. The gap from section A to Section B in this alternative is being addressed under a Division 6 Moving Ahead project. Therefore, this feasibility study only recommends resurfacing the intersection in this project.

**SECTION B:** Four-lane divided curb and gutter section, 79' wide face to face of curbs with a 23' raised grass median and 15' berms on 120' of right of way from approximately 1100' north of NC 130 (Love Mill Road) to US 74/76 Bypass. This cross-section has 14' wide outside lanes to accommodate bicycles. The gap from section A to Section B in this alternative is being

addressed under a Division 6 Moving Ahead project. Therefore, this feasibility study only recommends resurfacing the intersection in this project.

Under the Alternative #1 proposal, it is anticipated there will be two (2) residential and four (4) business relocatees. The total cost of this alternative is estimated to be \$39,500,000.

|                                     |                   |
|-------------------------------------|-------------------|
| Construction                        | 24,200,000        |
| <u>Right-of-Way &amp; Utilities</u> | <u>15,300,000</u> |
| Estimated Project Cost              | 39,500,000        |

## **ALTERNATIVE 2**

- ◆ **Section A:** Five-lane curb and gutter section, 68' wide face to face of curbs and 15' berms on 120' of right of way from 600' south of SR 1166 (Pleasant Plains Road) to approximately 835' south of NC 130 (Love Mill Road) intersection and resurfacing of the existing Love Mill Road intersection. This cross-section has 14' wide outside lanes to accommodate bicycles.
- ◆ **SECTION B:** Five-lane curb and gutter section, 68' wide face to face of curbs and 15' berms on 120' of right of way from approximately 1100' north of NC 130 (Love Mill Road) to US 74/76 Bypass interchange. This includes replacement of Bridge Number 19 (over Soules Swamp) and Bridge Number 42 (over Main Street/CSX R/R 629 266B) and resurfacing of the existing Love Mill Road intersection. This cross-section has 14' wide outside lanes to accommodate bicycles.

Under the Alternative #2 proposal, it is anticipated there will be five (5) residential and ten (10) business relocatees. The total cost of this alternative is estimated to be \$33,600,000.

|                                     |                   |
|-------------------------------------|-------------------|
| Construction                        | 18,300,000        |
| <u>Right-of-Way &amp; Utilities</u> | <u>15,300,000</u> |
| Estimated Project Cost              | 33,600,000        |

Note: Sidewalk cost for per side is \$100,000 per mile, which has been added to the construction costs shown above.

Auxiliary turn-lanes and Y-line improvements have also been included in the construction cost shown above, at the following locations:

- a) A right turn-lane, traveling north on US 701 Bypass for the Virgil Street (SR1437) intersection.
- b) A right turn-lane, traveling south on US 701 Bypass for the Virgil Street (SR1437) intersection.
- c) A right turn-lane, traveling north on US 701 Bypass for the Washington Street (US 74/76 Business) intersection.
- d) A right and left turn-lane, traveling south on US 701 Bypass for the Oliver Street intersection.

## V. Community Issues

A detailed investigation was not conducted for this feasibility study. However no impacts to parks, recreation areas, schools or community facilities are anticipated with this project.

## VI. Natural and Environmental Issues

A detailed environmental study was not conducted for this feasibility study, however the following is a preliminary review of environmental issues that might have a potential impact to the project. The information obtained for the environmental screening is from a Geographic Information System (GIS) database.

Along the project at several locations, the GIS database indicates contamination of groundwater and soil.

The proposed corridor crosses an area identified on the National Wetland Inventory between SR 1166 and SR 1429. Also Soules Swamp has a Division of Water Quality (DWQ) classification of C. Both areas will need to be further investigated. The widening of the Soules Swamp structure due to wetland concerns may require a 404 permit and a 401 water quality certification.

No known historic or property impact concerns were found located within the corridor during this preliminary investigation.

## VII. Recommendations

**ALTERNATIVE No.1:** After analyzing the available information, it was determined that a four-lane divided curb and gutter section would accommodate the projected 2035 traffic volumes, minimize the impacts of strip development, prevent indiscriminate left turn movements and allow median refuge for pedestrians. **Therefore, Alternative 1 is the preferred alternative for the proposed operation and safety improvements to US 701 Bypass (Madison St./Powell Blvd.) under this study.**

- ◆ The total project cost of the recommended Alternative Number 1, with a four-lane divided curb and gutter section, 79' wide face to face of curbs with a 23' raised grass median, 15' berms on 120' right-of-way, including outside lanes that are 14' wide to accommodate bicycles and sidewalks on both sides for the length of the project is estimated at \$39,500,000.

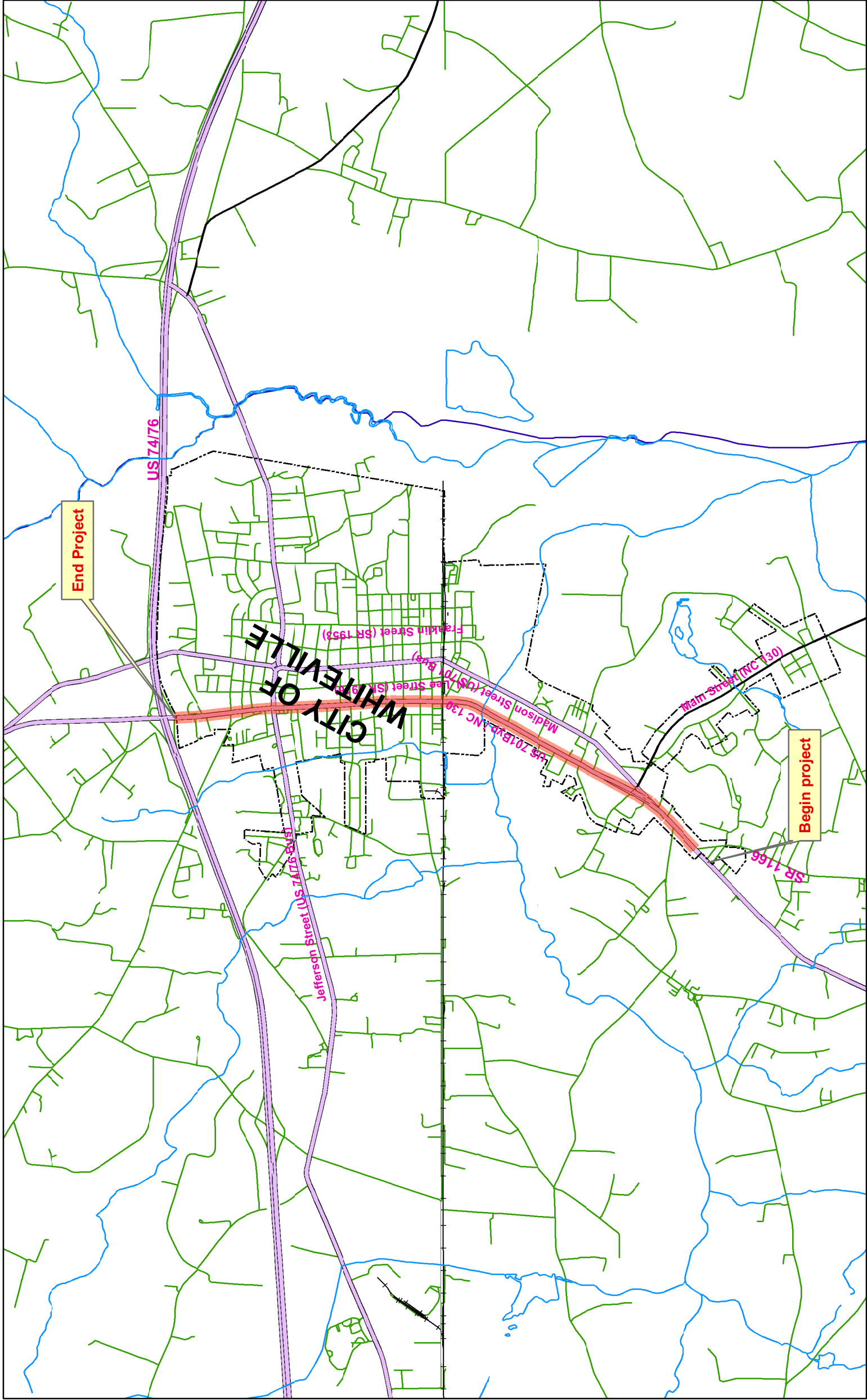
**ALTERNATIVE No.2:** After analyzing all the information available for the five-lane curb and gutter section, it was concluded the improvements would accommodate the design year 2035 volumes with an acceptable Level of Service (LOS), however the five-lane curb and gutter section tends to promote strip development and indiscriminate left turn movements, and does not provided a pedestrian refuge. Therefore Alternative Number 2 was not the selected alternative.

## VIII. Other Alternatives Considered

During this evaluation, we received a request from the Division 6, Construction Engineer and the Whiteville Interim City manager to consider the removal of the existing Main Street/CALA, Railroad Bridge number 42 (CSX-629-266B) grade separation. This request was not recommended because the railroad was still under consideration for possible future use. Although the railroad was listed as an inactive line on the Carolina Southern Railroad (CALA) database, it has not officially been abandoned at this time. If during later planning and design studies, it is determined that the railroad is no longer an issue or that an at-grade railroad crossing is acceptable, the estimated cost reduction would be as followed:

| <u>Alternative 1</u>  | <u>Alternative 2</u> |
|-----------------------|----------------------|
| <u>1,500,000 less</u> | 2,000,000 less       |

FS - 0206A  
Whiteville / Columbus County  
FIGURE 1



# LEGEND

- Rivers
- City Boundaries
- Airports
- Major Rivers
- dotrailroads
- Primary Routes
- NC
- US
- dotroads selection

